

ECE 6882 - Reinforcement Learning
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HW1 #1 (Due: Feb 13, 2023)

Problem 1.

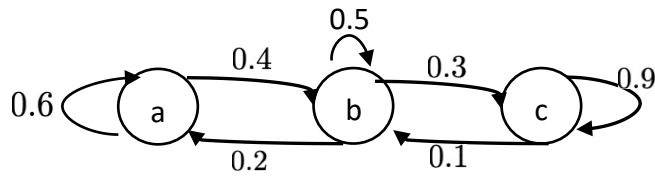
Consider a random variable X whose pdf is:

$$P_X(x) = \begin{cases} 1/2 & x = -1 \\ 1/4 & x = 0 \\ 1/4 & x = 1 \end{cases}$$

- a) Find $E[X]$ and $E[X^2]$
- b) Find $\text{Var}[X]$ and σ

Problem 2.

Consider a Markov chain $\{x_n, n = 0, 1, \dots\}$ with transition diagram:



- a) Compute the transition matrix, given $x=\{a,b,c\}$
- b) Compute $p(x_k = b|x_{k-1} = a)$ and $p(x_k = b|x_{k-2} = a)$